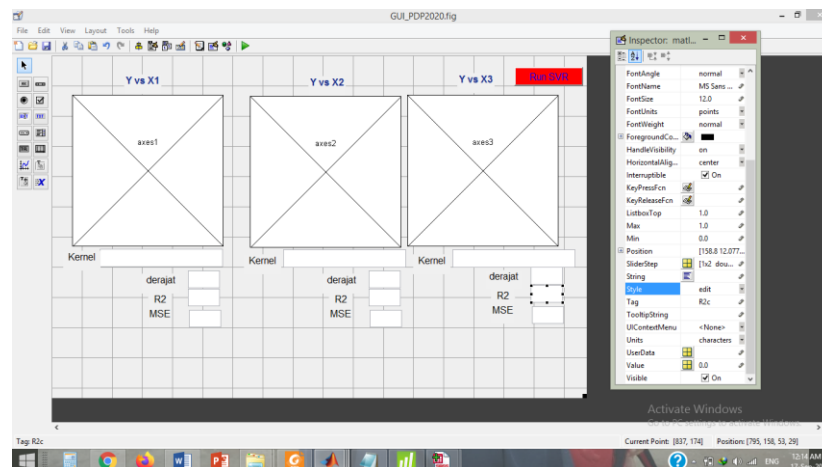


## Manual Produk: User Interface Matlab untuk Data Kemiskinan di Indonesia menggunakan Support Vector Regression

Banyak faktor yang mempengaruhi indeks kedalaman kemiskinan, terutama dari indikator kesehatan, SDM maupun ekonomi. Oleh karena itu diperlukan sebuah pemodelan statistika untuk menganalisa faktor-faktor yang mempengaruhi indeks kedalaman kemiskinan di Indonesia. Data kemiskinan yang digunakan pada penelitian ini bersumber dari data SUSENAS 2019 yang berupa data dengan individu pengamatan adalah seluruh propinsi di Indonesia. Beberapa penelitian sebelumnya metode Support Vector Regression (SVR) untuk menaksir Indeks Kedalaman Kemiskinan sebagai variabel respons dengan beberapa variabel dari indikator kesehatan dan ekonomi menunjukkan tingkat akurasi model yang sangat baik. Tetapi SVR terkendala pada pemilihan kernel yang tepat untuk mencari akurasi prediksi optimum. Sehingga perlu dibuatkan sebuah *user interface* yang otomatis memilih jenis kernel terbaik untuk memudahkan proses pemodelan. *User interface* juga akan membantu pengguna menggunakan SVR sekalipun tidak menguasai bahasa pemrograman.

User Interface ini bertujuan menghasilkan sebuah analisis statistika yang memudahkan memetakan pola faktor yang mempengaruhi kemiskinan. Kernel yang digunakan pada GUI Matlab ini menggunakan menggunakan model SVR kernel Gaussian (RBF) dan kernel Polynomial dengan otomatis mencari derajat optimum untuk penaksiran pola yang terbaik berdasarkan tingkat akurasi.

### Rancangan GUI



### Program pencarian kernel optimum

```
function [nsv_best, beta_best, bias_best, p1_best, MSE_best, R2_best]=  
best_svr(X,Y,ker,C,loss,e)  
if (nargin < 3 | nargin > 6) % check correct number of arguments  
    help svr  
else  
    R2_kumpul=zeros(1,3);  
    nsv_kumpul=zeros(1,3);  
    beta_kumpul=zeros(size(Y,1),3);
```

```

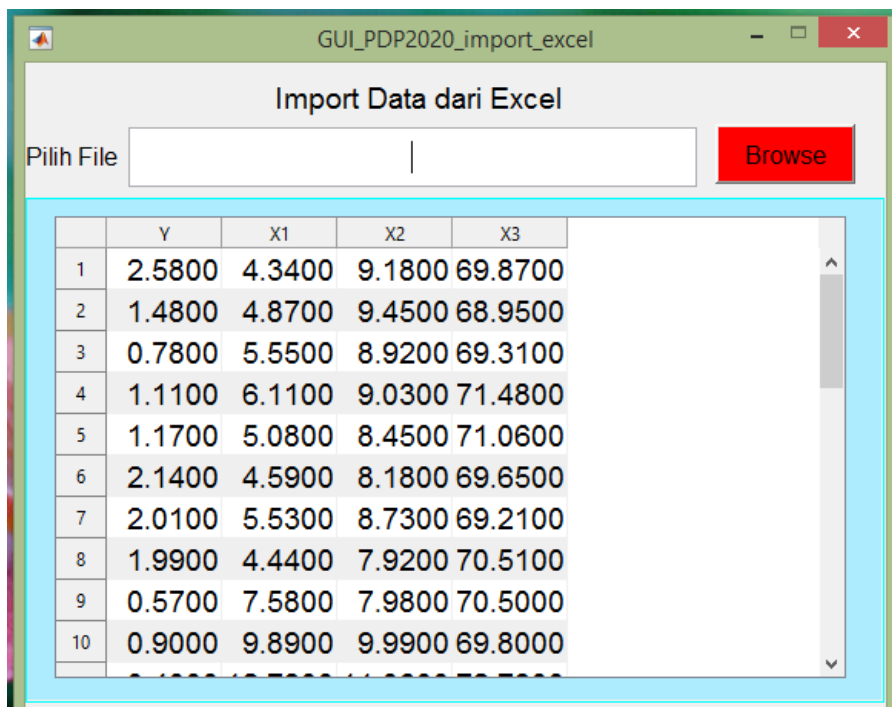
bias_kumpul=zeros(1,3);
MSE_kumpul=zeros(1,3);
for i=1:3
    p1=i
    [nsv beta bias]=svr(X,Y,ker);
    Yhat=svroutput(X,X,ker,beta,bias);
    residual=Y-Yhat;
    SSres=sum(residual.^2);
    SStot=sum((Y-mean(Y)).^2);
    MSE=mean(residual.^2);
    R2=1-SSres/SStot;
    R2_kumpul(i)=R2;
    nsv_kumpul(i)=nsv;
    beta_kumpul(:,i)=beta;
    bias_kumpul(i)=bias;
    MSE_kumpul(i)=MSE;
end
derajat=min(find(R2_kumpul==max(R2_kumpul)));
nsv_best=nsv_kumpul(derajat);
beta_best=beta_kumpul(:,derajat);
bias_best=bias_kumpul(derajat);
R2_best=R2_kumpul(derajat);
MSE_best=MSE_kumpul(derajat);
p1_best=derajat;
end

```

end

Program GUI memanggil file data (excel)

---



Syntax program

---

```

function varargout = GUI_PDP2020_import_excel(varargin)
% GUI_PDP2020_IMPORT_EXCEL MATLAB code for GUI_PDP2020_import_excel.fig

```

```

% GUI_PDP2020_IMPORT_EXCEL, by itself, creates a new
GUI_PDP2020_IMPORT_EXCEL or raises the existing
% singleton*.
%
% H = GUI_PDP2020_IMPORT_EXCEL returns the handle to a new
GUI_PDP2020_IMPORT_EXCEL or the handle to
% the existing singleton*.
%
% GUI_PDP2020_IMPORT_EXCEL('CALLBACK',hObject,eventData,handles,...)
calls the local
% function named CALLBACK in GUI_PDP2020_IMPORT_EXCEL.M with the given
input arguments.
%
% GUI_PDP2020_IMPORT_EXCEL('Property','Value',...) creates a new
GUI_PDP2020_IMPORT_EXCEL or raises the
% existing singleton*. Starting from the left, property value pairs are
% applied to the GUI before GUI_PDP2020_import_excel_OpeningFcn gets
called. An
% unrecognized property name or invalid value makes property application
% stop. All inputs are passed to GUI_PDP2020_import_excel_OpeningFcn
via varargin.
%
% *See GUI Options on GUIDE's Tools menu. Choose "GUI allows only one
% instance to run (singleton)".
%
% See also: GUIDE, GUIDATA, GUIHANDLES

% Edit the above text to modify the response to help GUI_PDP2020_import_excel

% Last Modified by GUIDE v2.5 24-Nov-2020 20:45:24

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',      mfilename, ...
                  'gui_Singleton', gui_Singleton, ...
                  'gui_OpeningFcn', @GUI_PDP2020_import_excel_OpeningFcn,
                  ...
                  'gui_OutputFcn',  @GUI_PDP2020_import_excel_OutputFcn, ...
                  'gui_LayoutFcn',  [], ...
                  'gui_Callback',    []);
if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end
% End initialization code - DO NOT EDIT

% --- Executes just before GUI_PDP2020_import_excel is made visible.
function GUI_PDP2020_import_excel_OpeningFcn(hObject, eventdata, handles,
varargin)
% This function has no output args, see OutputFcn.

```

```

% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to GUI_PDP2020_import_excel (see
VARARGIN)

% Choose default command line output for GUI_PDP2020_import_excel
handles.output = hObject;

% Update handles structure
guidata(hObject, handles);

% UIWAIT makes GUI_PDP2020_import_excel wait for user response (see UIRESUME)
% uiwait(handles.figure1);

% --- Outputs from this function are returned to the command line.
function varargout = GUI_PDP2020_import_excel_OutputFcn(hObject, eventdata,
handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles structure
varargout{1} = handles.output;

function lokasi_excel_Callback(hObject, eventdata, handles)
% hObject    handle to lokasi_excel (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of lokasi_excel as text
%         str2double(get(hObject,'String')) returns contents of lokasi_excel
as a double

% --- Executes during object creation, after setting all properties.
function lokasi_excel_CreateFcn(hObject, eventdata, handles)
% hObject    handle to lokasi_excel (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

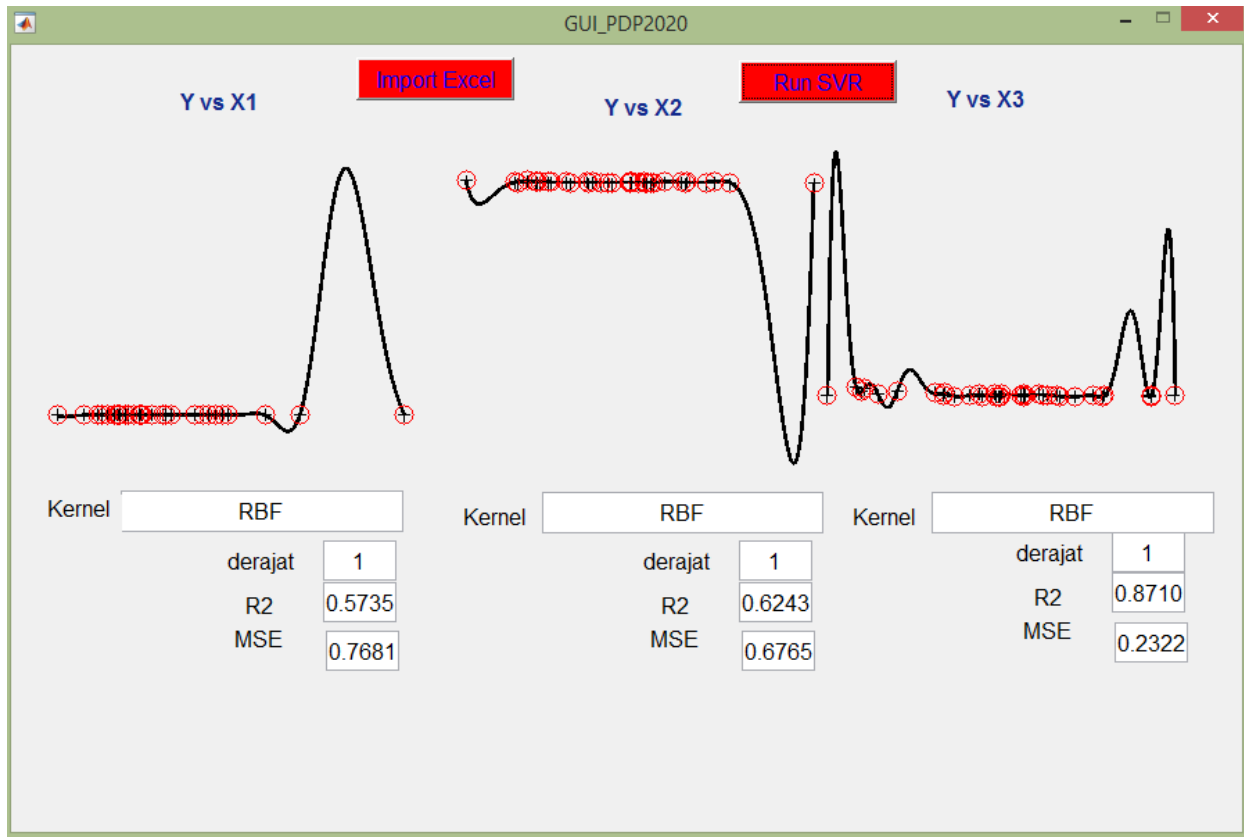
% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

% --- Executes on button press in cari_excel.

```

```
function cari_excel_Callback(hObject, eventdata, handles)
% hObject    handle to cari_excel (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
[namafile,direktori]=uigetfile({'*.xls'; '*.xlsx'; '*.mat'; '*.*'}, 'Pilih File
Data');
alamatfile=fullfile(direktori,namafile);
set(handles.lokasi_excel, 'String', alamatfile);
[num,txt,row] = xlsread(alamatfile);
save('data_GUI_PDP2020.mat', 'num');
set(handles.uitable_excel, 'data', num, 'ColumnName', {'Y', 'X1', 'X2', 'X3'});
```

## Program GUI utama



## Syntax program

```
function varargout = GUI_PDP2020(varargin)
% GUI_PDP2020 MATLAB code for GUI_PDP2020.fig
% GUI_PDP2020, by itself, creates a new GUI_PDP2020 or raises the
existing
% singleton*.
%
% H = GUI_PDP2020 returns the handle to a new GUI_PDP2020 or the handle
to
% the existing singleton*.
%
% GUI_PDP2020('CALLBACK',hObject,eventData,handles,...) calls the local
% function named CALLBACK in GUI_PDP2020.M with the given input
arguments.
%
% GUI_PDP2020('Property','Value',...) creates a new GUI_PDP2020 or
raises the
% existing singleton*. Starting from the left, property value pairs are
% applied to the GUI before GUI_PDP2020_OpeningFcn gets called. An
% unrecognized property name or invalid value makes property application
% stop. All inputs are passed to GUI_PDP2020_OpeningFcn via varargin.
%
% *See GUI Options on GUIDE's Tools menu. Choose "GUI allows only one
```

```

%     instance to run (singleton)".
%
% See also: GUIDE, GUIDATA, GUIHANDLES

% Edit the above text to modify the response to help GUI_PDP2020

% Last Modified by GUIDE v2.5 24-Nov-2020 20:50:50

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                  'gui_Singleton',  gui_Singleton, ...
                  'gui_OpeningFcn', @GUI_PDP2020_OpeningFcn, ...
                  'gui_OutputFcn',  @GUI_PDP2020_OutputFcn, ...
                  'gui_LayoutFcn',  [], ...
                  'gui_Callback',   []);
if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end
% End initialization code - DO NOT EDIT

% --- Executes just before GUI_PDP2020 is made visible.
function GUI_PDP2020_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to GUI_PDP2020 (see VARARGIN)

% Choose default command line output for GUI_PDP2020
handles.output = hObject;

% Update handles structure
guidata(hObject, handles);

% UIWAIT makes GUI_PDP2020 wait for user response (see UIRESUME)
% uiwait(handles.figure1);

% --- Outputs from this function are returned to the command line.
function varargout = GUI_PDP2020_OutputFcn(hObject, eventdata, handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles structure

```

```
varargout{1} = handles.output;
```

```
% --- Executes on button press in run_svr.
```

```
function run_svr_Callback(hObject, eventdata, handles)
```

```
% TOMBOL RUN
```

```
SVR=====
```

```
load('data_GUI_PDP2020.mat')
```

```
y=num(:,1);
```

```
x1=num(:,2);
```

```
x2=num(:,3);
```

```
x3=num(:,4);
```

```
C=Inf;
```

```
e=0;
```

```
sep=1;
```

```
ker='poly';
```

```
[nsv_x1a, beta_x1a, bias_x1a, p1_x1a, MSE_x1a, R2_x1a]= best_svr(x1,y,ker);
```

```
ker='rbf';
```

```
[nsv_x1b, beta_x1b, bias_x1b, p1_x1b, MSE_x1b, R2_x1b]= best_svr(x1,y,ker);
```

```
if R2_x1a > R2_x1b
```

```
    nsv_x1=nsv_x1a;
```

```
    beta_x1=beta_x1a;
```

```
    bias_x1=bias_x1a;
```

```
    p1_x1=p1_x1a;
```

```
    MSE_x1=MSE_x1a;
```

```
    R2_x1=R2_x1a;
```

```
else
```

```
    nsv_x1=nsv_x1b;
```

```
    beta_x1=beta_x1b;
```

```
    bias_x1=bias_x1b;
```

```
    p1_x1=p1_x1b;
```

```
    MSE_x1=MSE_x1b;
```

```
    R2_x1=R2_x1b;
```

```
end
```

```
ker='poly';
```

```
[nsv_x2a, beta_x2a, bias_x2a, p1_x2a, MSE_x2a, R2_x2a]= best_svr(x2,y,ker);
```

```
ker='rbf';
```

```
[nsv_x2b, beta_x2b, bias_x2b, p1_x2b, MSE_x2b, R2_x2b]= best_svr(x2,y,ker);
```

```
if R2_x2a > R2_x2b
```

```
    nsv_x2=nsv_x2a;
```

```
    beta_x2=beta_x2a;
```

```
    bias_x2=bias_x2a;
```

```
    p1_x2=p1_x2a;
```

```
    MSE_x2=MSE_x2a;
```

```
    R2_x2=R2_x2a;
```

```
else
```

```
    nsv_x2=nsv_x2b;
```

```
    beta_x2=beta_x2b;
```

```
    bias_x2=bias_x2b;
```



```

    p1_x2=p1_x2b;
    MSE_x2=MSE_x2b;
    R2_x2=R2_x2b;

end

ker='poly';
[nsv_x3a, beta_x3a, bias_x3a, p1_x3a, MSE_x3a, R2_x3a]= best_svr(x3,y,ker);
ker='rbf';
[nsv_x3b, beta_x3b, bias_x3b, p1_x3b, MSE_x3b, R2_x3b]= best_svr(x3,y,ker);

if R2_x3a > R2_x3b
    nsv_x3=nsv_x3a;
    beta_x3=beta_x3a;
    bias_x3=bias_x3a;
    p1_x3=p1_x3a;
    MSE_x3=MSE_x3a;
    R2_x3=R2_x3a;
else
    nsv_x3=nsv_x3b;
    beta_x3=beta_x3b;
    bias_x3=bias_x3b;
    p1_x3=p1_x3b;
    MSE_x3=MSE_x3b;
    R2_x3=R2_x3b;

end

[nsv_x2, beta_x2, bias_x2, p1_x2, MSE_x2, R2_x2]= best_svr(x2,y,ker);
[nsv_x3, beta_x3, bias_x3, p1_x3, MSE_x3, R2_x3]= best_svr(x3,y,ker);

%%%%%%%%% JIKA PAKAI REGRESI POLYNOMIAL
%pol=polyfit(x3,y,3);
%x3a=min(x3):0.1:max(x3);
%ya=polyval(pol,x3a);
%yhat3=polyval(pol,x3);
%residual3=y-yhat3;
%SSres3=sum(residual3.^2);
%SStot3=sum((y-mean(y)).^2);
%MSE_x3=mean(residual3.^2);
%R2_x3=1-SSres3/SStot3;

axes(handles.axes1);
svrplot(x1,y,ker,beta_x1,bias_x1)
axes(handles.axes2);
svrplot(x2,y,ker,beta_x2,bias_x2)
axes(handles.axes3);
svrplot(x3,y,ker,beta_x3,bias_x3)

%%%%%%%%% PLOT JIKA PAKAI REGRESI POLYNOMIAL
%plot(x3,y,'or')
%hold on
%plot(x3a,ya,'k')
%hold off

```

```

%axis off

if R2_x1a > R2_x1b
    kernell1='Polynomial';
else
    kernell1='RBF';
end

if R2_x2a > R2_x2b
    kernel2='Polynomial';
else
    kernel2='RBF';
end

if R2_x3a > R2_x3b
    kernel3='Polynomial';
else
    kernel3='RBF';
end

set(handles.kernel_x1, 'string', kernell1);
set(handles.kernel_x2, 'string', kernel2);
set(handles.kernel_x3, 'string', kernel3);

set(handles.derajat1, 'string', num2str(p1_x1));
set(handles.derajat2, 'string', num2str(p1_x2));
set(handles.derajat3, 'string', num2str(p1_x3));
set(handles.R2a, 'string', num2str(R2_x1));
set(handles.R2b, 'string', num2str(R2_x2));
set(handles.R2c, 'string', num2str(R2_x3));
set(handles.mse1, 'string', num2str(MSE_x1));
set(handles.mse2, 'string', num2str(MSE_x2));
set(handles.mse3, 'string', num2str(MSE_x3));

% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

function derajat2_Callback(hObject, eventdata, handles)
% hObject handle to derajat2 (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

% Hints: get(hObject, 'String') returns contents of derajat2 as text
% str2double(get(hObject, 'String')) returns contents of derajat2 as a
double

```

```

% --- Executes during object creation, after setting all properties.
function derajat2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to derajat2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function kernel_x1_Callback(hObject, eventdata, handles)

% --- Executes during object creation, after setting all properties.
function kernel_x1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to kernel_x1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function R2b_Callback(hObject, eventdata, handles)
% hObject    handle to R2b (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of R2b as text
%        str2double(get(hObject,'String')) returns contents of R2b as a
double

% --- Executes during object creation, after setting all properties.
function R2b_CreateFcn(hObject, eventdata, handles)
% hObject    handle to R2b (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.

```

```

if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function mse2_Callback(hObject, eventdata, handles)
% hObject    handle to mse2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of mse2 as text
%        str2double(get(hObject,'String')) returns contents of mse2 as a
double

% --- Executes during object creation, after setting all properties.
function mse2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to mse2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function derajat1_Callback(hObject, eventdata, handles)
% hObject    handle to derajat1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of derajat1 as text
%        str2double(get(hObject,'String')) returns contents of derajat1 as a
double

% --- Executes during object creation, after setting all properties.
function derajat1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to derajat1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

```

```

function R2a_Callback(hObject, eventdata, handles)
% hObject    handle to R2a (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of R2a as text
%        str2double(get(hObject,'String')) returns contents of R2a as a
double

% --- Executes during object creation, after setting all properties.
function R2a_CreateFcn(hObject, eventdata, handles)
% hObject    handle to R2a (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function msel1_Callback(hObject, eventdata, handles)
% hObject    handle to msel1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of msel1 as text
%        str2double(get(hObject,'String')) returns contents of msel1 as a
double

% --- Executes during object creation, after setting all properties.
function msel1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to msel1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

```

```

function derajat3_Callback(hObject, eventdata, handles)
% hObject      handle to derajat3 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of derajat3 as text
%         str2double(get(hObject,'String')) returns contents of derajat3 as a
double

% --- Executes during object creation, after setting all properties.
function derajat3_CreateFcn(hObject, eventdata, handles)
% hObject      handle to derajat3 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function R2c_Callback(hObject, eventdata, handles)
% hObject      handle to R2c (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of R2c as text
%         str2double(get(hObject,'String')) returns contents of R2c as a
double

% --- Executes during object creation, after setting all properties.
function R2c_CreateFcn(hObject, eventdata, handles)
% hObject      handle to R2c (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function mse3_Callback(hObject, eventdata, handles)
% hObject      handle to mse3 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

```

```

% Hints: get(hObject,'String') returns contents of mse3 as text
%         str2double(get(hObject,'String')) returns contents of mse3 as a
double

% --- Executes during object creation, after setting all properties.
function mse3_CreateFcn(hObject, eventdata, handles)
% hObject    handle to mse3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function kernel_x2_Callback(hObject, eventdata, handles)
% hObject    handle to kernel_x2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of kernel_x2 as text
%         str2double(get(hObject,'String')) returns contents of kernel_x2 as a
double

% --- Executes during object creation, after setting all properties.
function kernel_x2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to kernel_x2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function kernel_x3_Callback(hObject, eventdata, handles)
% hObject    handle to kernel_x3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of kernel_x3 as text
%         str2double(get(hObject,'String')) returns contents of kernel_x3 as a
double

```

```

% --- Executes during object creation, after setting all properties.
function kernel_x3_CreateFcn(hObject, eventdata, handles)
% hObject    handle to kernel_x3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

% --- Executes on button press in browse_data.
function browse_data_Callback(hObject, eventdata, handles)
% hObject    handle to browse_data (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDAT
GUI_PDP2020_import_excel

```

## SINTAX GUI

```

function varargout = GUI_PDP2020(varargin)
% GUI_PDP2020 MATLAB code for GUI_PDP2020.fig
%     GUI_PDP2020, by itself, creates a new GUI_PDP2020 or raises the
existing
%     singleton*.
%
%     H = GUI_PDP2020 returns the handle to a new GUI_PDP2020 or the handle
to
%     the existing singleton*.
%
%     GUI_PDP2020('CALLBACK',hObject,eventData,handles,...) calls the local
%     function named CALLBACK in GUI_PDP2020.M with the given input
arguments.
%
%     GUI_PDP2020('Property','Value',...) creates a new GUI_PDP2020 or
raises the
%     existing singleton*. Starting from the left, property value pairs are
%     applied to the GUI before GUI_PDP2020_OpeningFcn gets called. An
%     unrecognized property name or invalid value makes property application
%     stop. All inputs are passed to GUI_PDP2020_OpeningFcn via varargin.
%
%     *See GUI Options on GUIDE's Tools menu. Choose "GUI allows only one

```



```

%     instance to run (singleton)".
%
% See also: GUIDE, GUIDATA, GUIHANDLES

% Edit the above text to modify the response to help GUI_PDP2020

% Last Modified by GUIDE v2.5 16-Sep-2020 21:48:34

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                  'gui_Singleton',  gui_Singleton, ...
                  'gui_OpeningFcn', @GUI_PDP2020_OpeningFcn, ...
                  'gui_OutputFcn',  @GUI_PDP2020_OutputFcn, ...
                  'gui_LayoutFcn',  [], ...
                  'gui_Callback',   []);
if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end
% End initialization code - DO NOT EDIT

% --- Executes just before GUI_PDP2020 is made visible.
function GUI_PDP2020_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to GUI_PDP2020 (see VARARGIN)

% Choose default command line output for GUI_PDP2020
handles.output = hObject;

% Update handles structure
guidata(hObject, handles);

% UIWAIT makes GUI_PDP2020 wait for user response (see UIRESUME)
% uiwait(handles.figure1);

% --- Outputs from this function are returned to the command line.
function varargout = GUI_PDP2020_OutputFcn(hObject, eventdata, handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles structure

```

```

varargout{1} = handles.output;

% --- Executes on button press in run_svr.
function run_svr_Callback(hObject, eventdata, handles)
% TOMBOL RUN
SVR=====
load('propinsi2019.mat')
ker='poly'
[nsv_x1, beta_x1, bias_x1, p1_x1, MSE_x1, R2_x1]= best_svr(x1,y,ker);
[nsv_x2, beta_x2, bias_x2, p1_x2, MSE_x2, R2_x2]= best_svr(x2,y,ker);
pol=polyfit(x3,y,3);
x3a=min(x3):0.1:max(x3);
ya=polyval(pol,x3a);
yhat3=polyval(pol,x3);
residual3=y-yhat3;
SSres3=sum(residual3.^2);
SStot3=sum((y-mean(y)).^2);
MSE_x3=mean(residual3.^2);
R2_x3=1-SSres3/SStot3;

axes(handles.axes1);
svrplot(x1,y,ker,beta_x1,bias_x1)
axes(handles.axes2);
svrplot(x2,y,ker,beta_x2,bias_x2)
axes(handles.axes3);
plot(x3,y,'or')
hold on
plot(x3a,ya,'k')
hold off
axis off

set(handles.kernel_x1,'string','SVR Polynomial');
set(handles.kernel_x2,'string','SVR Polynomial');
set(handles.kernel_x3,'string','Regresi Polynomial');
set(handles.derajat1,'string',num2str(p1_x1));
set(handles.derajat2,'string',num2str(p1_x2));
set(handles.derajat3,'string',num2str(3));
set(handles.R2a,'string',num2str(R2_x1));
set(handles.R2b,'string',num2str(R2_x2));
set(handles.R2c,'string',num2str(R2_x3));
set(handles.mse1,'string',num2str(MSE_x1));
set(handles.mse2,'string',num2str(MSE_x2));
set(handles.mse3,'string',num2str(MSE_x3));

% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

```

```

function derajat2_Callback(hObject, eventdata, handles)
% hObject      handle to derajat2 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of derajat2 as text
%         str2double(get(hObject,'String')) returns contents of derajat2 as a
double

% --- Executes during object creation, after setting all properties.
function derajat2_CreateFcn(hObject, eventdata, handles)
% hObject      handle to derajat2 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function kernel_x1_Callback(hObject, eventdata, handles)

% --- Executes during object creation, after setting all properties.
function kernel_x1_CreateFcn(hObject, eventdata, handles)
% hObject      handle to kernel_x1 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function R2b_Callback(hObject, eventdata, handles)
% hObject      handle to R2b (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of R2b as text
%         str2double(get(hObject,'String')) returns contents of R2b as a
double

```

```
% --- Executes during object creation, after setting all properties.
function R2b_CreateFcn(hObject, eventdata, handles)
% hObject    handle to R2b (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called
```

```
% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
```

```
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end
```

```
function mse2_Callback(hObject, eventdata, handles)
% hObject    handle to mse2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
```

```
% Hints: get(hObject,'String') returns contents of mse2 as text
%         str2double(get(hObject,'String')) returns contents of mse2 as a
double
```

```
% --- Executes during object creation, after setting all properties.
function mse2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to mse2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called
```

```
% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
```

```
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end
```

```
function derajat1_Callback(hObject, eventdata, handles)
% hObject    handle to derajat1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
```

```
% Hints: get(hObject,'String') returns contents of derajat1 as text
%         str2double(get(hObject,'String')) returns contents of derajat1 as a
double
```

```
% --- Executes during object creation, after setting all properties.
function derajat1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to derajat1 (see GCBO)
```

```

% eventdata reserved - to be defined in a future version of MATLAB
% handles empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
% See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

```

```

function R2a_Callback(hObject, eventdata, handles)
% hObject handle to R2a (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of R2a as text
% str2double(get(hObject,'String')) returns contents of R2a as a
double

```

```

% --- Executes during object creation, after setting all properties.
function R2a_CreateFcn(hObject, eventdata, handles)
% hObject handle to R2a (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
% See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

```

```

function msel1_Callback(hObject, eventdata, handles)
% hObject handle to msel1 (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of msel1 as text
% str2double(get(hObject,'String')) returns contents of msel1 as a
double

```

```

% --- Executes during object creation, after setting all properties.
function msel1_CreateFcn(hObject, eventdata, handles)
% hObject handle to msel1 (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.

```

```

%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function derajat3_Callback(hObject, eventdata, handles)
% hObject    handle to derajat3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of derajat3 as text
%       str2double(get(hObject,'String')) returns contents of derajat3 as a
double

% --- Executes during object creation, after setting all properties.
function derajat3_CreateFcn(hObject, eventdata, handles)
% hObject    handle to derajat3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function R2c_Callback(hObject, eventdata, handles)
% hObject    handle to R2c (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of R2c as text
%       str2double(get(hObject,'String')) returns contents of R2c as a
double

% --- Executes during object creation, after setting all properties.
function R2c_CreateFcn(hObject, eventdata, handles)
% hObject    handle to R2c (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

```

end

```
function mse3_Callback(hObject, eventdata, handles)
% hObject    handle to mse3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of mse3 as text
%        str2double(get(hObject,'String')) returns contents of mse3 as a
double

% --- Executes during object creation, after setting all properties.
function mse3_CreateFcn(hObject, eventdata, handles)
% hObject    handle to mse3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end
```

```
function kernel_x2_Callback(hObject, eventdata, handles)
% hObject    handle to kernel_x2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of kernel_x2 as text
%        str2double(get(hObject,'String')) returns contents of kernel_x2 as a
double

% --- Executes during object creation, after setting all properties.
function kernel_x2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to kernel_x2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end
```

```

function kernel_x3_Callback(hObject, eventdata, handles)
% hObject      handle to kernel_x3 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of kernel_x3 as text
%        str2double(get(hObject,'String')) returns contents of kernel_x3 as a
double

% --- Executes during object creation, after setting all properties.
function kernel_x3_CreateFcn(hObject, eventdata, handles)
% hObject      handle to kernel_x3 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

```



